Attorney's Docket No.: 12674-006001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Yue-Luen Bai et al
Serial No. : 10/038,835
Filed : January 4, 2002
Title : DETECTION OF RESPIRATORY VIRUSES

Art Unit : 1648
Examiner : Myron G. Hill

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION BY CHI-HORNG BAIR UNDER 37 C.F.R. 1.132

I, Chi-Horng Bair, hereby declare that:

1. I am the Manager of Department of Molecular Biology at DR. Chip Biotechnology Inc. The subject matter described and claimed in the above-identified application relates to specific nucleic acid sequences for simultaneously detecting multiple respiratory viruses including human parainfluenza virus 1, human parainfluenza virus 2, human parainfluenza virus 3, respiratory syncytial virus, influenza virus A, influenza virus B, and adenovirus.

2. In a final Office Action dated May 26, 2004 and an Advisory Action dated September 1, 2004, the Examiner maintained an obviousness rejection of claims 4, 5, 7, 8, 12-17, and 27 over Grondahl et al., J. Clin. Microbiol., 1999, 37(1):1-7 ("Grondahl") in view of Echevarria et al., J. Clin. Microbio.,1998, 36(5): 1388-1391 ("Echevarria"), Osiowy et al., J. Clin. Microbio. 1998, 36:3139-3154 ("Osiowy"), Zuckerman et al., J. Virol. Methods, 1993, 44:35-44 ("Zuckerman"), Buck et al., Biotechniques, 1999, 27(3): 528-536 ("Buck"), U.S. Patent 5,374,717 to Rota et al., ("Rota"), and 6 GenBank Accession Nos, i.e., X55803, X57559, M18759, M73260, M11486, and M12594. According to the Examiner, (i) Rota et al. and the 6 GenBank Accession Nos teach sequences that cover the primer/probe SEQ ID NOs recited in the rejected claims; and (ii) Buck supports that all nucleic acids selected from the prior art sequences

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would be expected to function as primers. As such, he concluded that it would be obvious to one skilled in the art to combine all cited references and to select PCR primers from the prior art sequences to make the claimed primers.

3. I or others have synthesized a pair of PCR primers, FP-F and FP-R, that contain sequences selected from Adenovirus genome (GenBank Accession No.: BK000407) based on the same strategy for selecting ADV-fl and ADV-rl (SEQ ID NOs: 24 and 26, respectively) listed in Table 1 of the specification. Summarized in the table below are the sequences of FP-F, FP-R, ADV-fl, and ADV-rl, as well as their characteristics.

Table 1.The characteristics of adenovirus primer for PCR

Target gene	Name	Sequence 5' →3'	length	Tm	G+C %	Primer dimer	Hairpin stem	GenBank Accession No.
Hexon	ADV-fl	CCACCTTCTTCCCCAT	16	46	56	0	0	BK000407 (20735~21750)
	ADV-rl	CTCATKGGCTGGAAGTT	17	47	53	4	2	BK000407 (21274~21290)
Fiber protein	FP-F	GAAGACACCTTCAACCCCGT	20	54	55	0	3	BK000407 (31051~31070)
	FP-R	GCCCATTTTYAGCGCAAGCAT	21	54	52	0	4	BK000407 (31210~31230)

The two pairs of primers, i.e., (1) ADV-fl and ADV-rl, and (2) FP-F and FP-R, were used respectively to amplify the target genes from nucleic acid samples of Adenovirus subtypes 2, 3, and 7 in the same manner descried in Examples 1 and 2 of the specification. The results are presented in Figure 1 below.

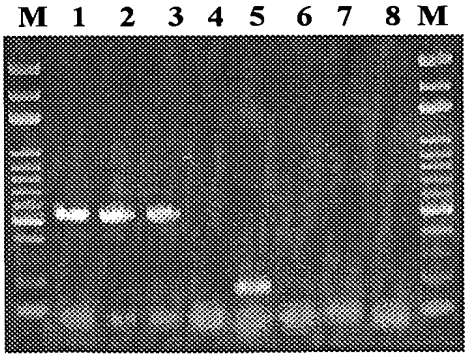

Figure 1. PCR-Electrophoresis analysis of Adenovirus subtype 2, 3, and 7

Lane M: 100bp DNA ladder
Lanes 1-3: results from Adenovirus subtypes 2, 3, and 7, respectively, using ADV-fl and ADV-rl
Lanes 5-7: results from Adenovirus subtypes 2, 3, and 7, respectively, using FP-F and FP-R
Lanes 4 and 8: negative controls

As shown in Figure 1, the PCR reactions having ADV-f1 and ADV-r1 generated specific 556 bp products from all of Adenovirus subtypes 2, 3, and 7 (Lanes 1-3). In contrast, the PCR reactions having FP-F and FP-R only generated specific 180 bp products from Adenovirus subtype 2 (Lane 5), but not Adenovirus subtypes 3 and 7 (Lanes 6 and 7).

4. All statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully Submitted,

Date: 2004. 11. 5.

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